

CLAIMS

1. A method comprising:
 - a) applying a die attach adhesive composition to a substrate,
 - b) curing the die attach adhesive composition to form a die attach adhesive,
 - 5 c) plasma treating a surface of the die attach adhesive,
 - d) plasma treating a surface of a semiconductor die,
 - e) contacting the plasma treated surface of the semiconductor die with the plasma treated surface of the die attach adhesive,
 - optionally f) wire bonding the semiconductor die to the substrate,
 - 10 g) injection molding a curable liquid over the product of step f),
 - optionally h) forming solder balls on a surface of the substrate opposite the die attach adhesive.
2. The method of claim 1, where the die attach adhesive comprises a silicone die attach
15 adhesive.
3. The method of claim 1, where the curable liquid comprises a silicone composition.
4. The method of claim 3, where the silicone composition cures to form an over mold
20 having a modulus of 25 to 1,000 megaPascals, and where the silicone composition has a viscosity of 80 to 3000 Poise and a curing profile such that the silicone composition cures in 30 to 120 seconds at a temperature of 80 to 240 °C.
5. The method of claim 4, where step g) comprises:
 - 25 i) placing the product of step e) or the product of step f) in an open mold,
 - ii) closing the mold to form a mold cavity,
 - iii) heating the mold cavity,
 - iv) injection molding a curable liquid into the mold cavity to overmold the semiconductor die on the substrate,
 - 30 v) opening the mold and removing the product of step iv), and
 - optionally vi) post-curing the product of step v).

6. An electronic component prepared by the method of claim 1.
7. A method comprising:
- i) placing a semiconductor device in an open mold,
 - 5 ii) closing the mold to form a mold cavity,
 - iii) heating the mold cavity,
 - iv) injection molding a curable liquid into the mold cavity to overmold the semiconductor device,
 - v) opening the mold and removing the product of step iv), and
 - 10 optionally vi) post-curing the product of step v).
8. The method of claim 7, where the semiconductor device comprises a substrate, a die attach adhesive, and an integrated circuit, wherein the integrated circuit is attached to a surface of the substrate through the die attach adhesive, and where the integrated circuit is
- 15 wire bonded to the surface of the substrate,
9. The method of claim 7, where step ii) is carried out by applying a clamping force of 1 to 27 tons.
- 20 10. The method of claim 7, where the curable liquid comprises a silicone composition.
11. The method of claim 7, where step iii) is performed at a temperature of 80 to 180 °C.
12. The method of claim 7, wherein step iv) is carried out at an injection speed sufficient
- 25 to provide a pressure of 0.6 to 2.0 MPa force in the mold cavity.
13. The method of claim 10, where the silicone composition has a viscosity of 80 to 3000 Poise.
- 30 14. The method of claim 10, where a cured product of the silicone composition has a modulus of 100 to 1,000 megaPascals.

15. A method comprising:

- a) applying a die attach adhesive composition to a substrate,
- b) attaching a semiconductor die to the die attach adhesive composition,
- c) curing the die attach adhesive composition to form a die attach adhesive,
- 5 optionally d) wire bonding the semiconductor die to the substrate, and
- e) injection molding a curable liquid over the semiconductor device formed as the product of step c) or step d), wherein injection molding is carried out by a method comprising

- i) placing the semiconductor device in an open mold,
- 10 ii) closing the mold to form a mold cavity,
- iii) heating the mold cavity,
- iv) injection molding a curable liquid into the mold cavity to overmold the semiconductor device,
- v) opening the mold and removing the product of step iv), and
- 15 optionally vi) post-curing the product of step v).

16. A method comprising:

- a) attaching a semiconductor die to a substrate to form a semiconductor device, and
- b) injection molding a curable liquid over the semiconductor device by a method

20 comprising

- i) placing the semiconductor device in an open mold,
- ii) closing the mold to form a mold cavity,
- iii) heating the mold cavity,
- iv) injection molding a curable liquid into the mold cavity to overmold the
- 25 semiconductor device,
- v) opening the mold and removing the product of step iv), and
- optionally vi) post-curing the product of step v).